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The effect of out-of-class exposure to English language media on learners' vocabulary knowledge.

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Abstract

Previous research has shown that out-of-class exposure to foreign language input has a positive effect on learners' vocabulary knowledge. The aim of this study is to investigate (1) how often Flemish English-as-a-foreign language learners are exposed to English language media outside of the classroom, (2) whether current out-of-class exposure to English language media is related to learners' vocabulary knowledge, and (3) whether length of instruction (three or six years), gender, and out-of-class exposure to English language media affect Flemish learners' vocabulary. Data were collected with 79 English-as-a-foreign language learners. They were administered a frequency-based vocabulary test and a questionnaire. The findings of this study show that Flemish English-as-a-foreign language are frequently exposed to English language media. The results also indicate a positive relationship between learners' exposure to non-subtitled TV programs and movies, the Internet, and written print (books, magazines). Finally, both length of instruction and current out-of-class exposure to English language media had an effect on learners' vocabulary knowledge, but out-of-class exposure had a larger effect than length of instruction.

Vocabulary research has shown how many words learners need to know in order to read, listen to, or watch authentic English language input. For reading authentic texts, learners should be familiar with the most frequent 8,000 word families to reach 98% lexical coverage (Laufer & Ravenhorst-Kalovski, 2010; Nation, 2006). However, knowledge of the most frequent 4,000-5,000 word families might suffice for 95% lexical coverage (Laufer & Ravenhorst-Kalovski, 2010). Figures for spoken input tend to be lower, but at the same time they differ considerably. In order to watch TV and movies, Webb and Rodgers (2009a, 2009b) argued that learners should know 2,000 to 4,000 word families plus proper nouns and marginal words. This would correspond to 95% lexical coverage. In a study focusing on informal narrative passages, van Zeeland and Schmitt (2013) found that learners should know 2,000-3,000 word families to reach 95% lexical coverage, although their findings also demonstrated that 90% coverage might suffice for adequate listening comprehension. Using a listening test at the C2-level according to Common European Framework of Reference, Stæhr (2009) found that knowledge of the 5,000 most frequent word families was necessary to reach 98% coverage. However, for listening at the B1-level (according to the Common European Framework of Reference), fewer words (1,000-1,500) and less coverage (90%) seem to be needed (Noreillie, Kestemont, Heylen, Desmet & Peters, this issue). These figures show that vocabulary demands can be high and that learners face a daunting challenge. These figures also show that it is unlikely that all these words will be learned in the foreign language classroom for the simple reason that there is not enough time.

Given that learners need to know thousands of words and that classroom-time is limited, learners should engage in out-of-class language activities to enlarge their vocabulary knowledge in order to meet the vocabulary demands for understanding input (Verspoor, de Bot & van Rein, 2011). It has been repeatedly argued that exposure to input plays a pivotal role in language learning (Muñoz, 2008, 2011). Researchers have advocated extensive

reading (Nation, 2006, 2015) and extensive viewing (Webb, 2015) as a method for fostering vocabulary learning. Previous studies have shown that out-of-class exposure to books, (subtitled) TV programs and computer games have a positive effect on learners' language proficiency (González-Fernández & Schmitt, 2015; Lindgren & Muñoz, 2013). This study investigates how Flemish learners engage with English outside of the classroom, how current out-of-class exposure to English input affects English-as-a-foreign language (EFL) learners' vocabulary knowledge and which factors (length of instruction, gender, out-of-class exposure) determine learners' vocabulary knowledge.

Background

Reading

Research into the effects of out-of-class exposure to a foreign language has focused on the following factors: foreign language books, TV programs, songs, computer games and the Internet. We will first review studies dealing with the effects of out-of-class reading and extensive reading on vocabulary learning before moving on to the role (1) TV viewing and (2) computer games and the Internet can play in vocabulary development.

Few studies have examined the effect of out-of-class reading on vocabulary learning (Briggs, 2015; González-Fernández & Schmitt, 2015; Lindgren & Muñoz, 2013; Schmitt & Redwood, 2011). Two studies found positive effects of out-of-class reading on vocabulary learning. González-Fernández and Schmitt found a high correlation between out-of-class reading and learners' knowledge of English collocations. Similarly, Schmitt and Redwood's (2011) study showed that the amount of out-of-class reading had an effect on learners' knowledge of phrasal verbs. However, two other studies with young learners showed that these learners engaged in few reading activities outside of the classroom (Lindgren & Muñoz, 2013; Sylvén & Sundqvist, 2012), making it difficult to study its effect on vocabulary

learning. Nevertheless, reading and extensive reading have been proposed as a method for increasing learners' vocabulary size. Moreover, research has shown that reading and extensive reading in particular are beneficial for vocabulary learning.

One of the leading proponents of extensive reading is Paul Nation. In a recent article, Nation (2015) lists a number of advantages of extensive reading. He states that extensive reading provides learners with repeated encounters with (unfamiliar) words in different contexts. Further, he argues that each new meeting with a word will add new knowledge of that word and will thus enrich knowledge of partially known words. Repeated encounters can also foster fluency development. Finally, learning gains can be boosted when learners look up the words of unknown words in a dictionary.

A number of empirical studies have provided support for the benefits of (extensive) reading for vocabulary learning. Horst (2005) showed that the learners in her study learned about half of the unfamiliar words they encountered in graded readers. Similarly, Pigada and Schmitt (2006) also found encouraging results for reading simplified readers. By testing several word knowledge aspects (spelling, article use, meaning) and taking frequency of occurrence into account in their case study, they found learning gains of up to 65% of the target words. Lower learning gains were reported in a study by Brown, Waring, and Donkaewbua (2008), but unlike other studies, vocabulary learning was also measured three months after the treatment. In a recent study, Webb and Chang (2015a) focused on the effects of reading and listening to multiple texts (= graded readers). They also found considerable learning gains (44.06%) immediately after the extensive reading treatment as well as three months later (36.66%). Webb and Chang (2015b) also investigated whether learning gains from extensive reading (graded readers) are mediated by learners' prior vocabulary knowledge. Their findings clearly showed that prior vocabulary knowledge may have a large effect on the number of words learned, suggesting that extensive reading might be more

suited for intermediate and advanced learners. Using one-on-one interviews to measure learning gains, Pellicer Sánchez and Schmitt (2010) demonstrated that reading an authentic novel can foster several word knowledge aspects, but that learning gains are affected by frequency of occurrence.

What all these studies show is that learning from reading is possible and that the learning gains through extensive reading are generally larger than through reading a single text. It seems that repeated encounters and large amounts of input are necessary to seriously boost learners' vocabulary knowledge. Although reading is beneficial for vocabulary learning, few studies have looked at the effect of out-of-class reading on vocabulary learning (see González-Fernández & Schmitt (2015) and Schmitt & Redwood (2011) for two exceptions), as most studies were conducted in the context of extensive reading programs with university students.

TV viewing

Recently, extensive viewing has also been put forward as a potentially effective method to enlarge a learner's vocabulary size (Webb, 2015). Webb (2015) argues that watching foreign language TV extensively "could fill the need for greater L2 input" (p. 159) that is lacking in many foreign language learning contexts. Webb defines extensive viewing as regular viewing of L2 television inside and outside of the foreign language classroom. Compared to written input, TV programs have the advantage that there is a fairly large amount of repetition of mid-frequency and low-frequency words (Webb & Rodgers, 2009a). This is especially the case in related TV programs, such as TV series (Rodgers & Webb, 2011). The fact that words reoccur more often in related TV programs than in unrelated TV programs enhances the likelihood of words beyond the 4,000 most frequent words to be learned incidentally (Rodgers & Webb, 2011). Two recent empirical studies have shown the

potential that watching one episode (Peters & Webb, forthcoming) or 13 episodes of a TV show (Rodgers, 2013) can have for vocabulary learning.

Research has shown that watching L2 TV is an out-of-class activity that learners frequently engage in (Lindgren & Muñoz, 2013; Sundqvist & Sylvén, 2014) and that out-of-class TV viewing is beneficial for language learning. Lindgren and Muñoz (2013) showed that out-of-class exposure to the foreign language was the second best predictor of learners' reading and listening comprehension, after cognate linguistic distance. Especially watching (subtitled) movies seemed to be positively correlated with learners' reading and listening proficiency. Other exposure predictors were listening to songs and playing computer games, but these parameters had less impact on learners' reading and listening scores. Housen, Janssens, and Pierrard (2001) compared Flemish learners' proficiency in English and French. In spite of more years of formal instruction in French, learners' English language proficiency was better than their French language proficiency. Given the lack of differences in teaching methods, their findings are explained in light of the large amounts of out-of-class exposure to English. It should be pointed out here that in Flanders, like in a number of other European countries, foreign language TV programs and movies are subtitled and not dubbed. This means that Flemish learners are exposed to English on a daily basis (see also Verspoor et al., 2011).

Studies specifically addressing the effect of out-of-class TV viewing on vocabulary knowledge have also revealed positive findings. Kuppens (2010) showed that Flemish learners in their last year of primary education who had not received any formal instruction yet are exposed to large amount of English language input, mainly through (subtitled) TV, movies, music, websites and computer games. Additionally, she showed that watching subtitled TV and movies clearly had an impact on learners' vocabulary knowledge. Vocabulary knowledge was measured in a translation test in which learners had to translate

eight sentences from Dutch into English and from English into Dutch. Studies have shown that watching TV and movies also has a beneficial effect on learners' knowledge of collocations (González-Fernández & Schmitt, 2015) and phrasal verbs (Schmitt & Redwood, 2011). Similarly, Sockett and Kusyk (2015) found a positive effect of regularly watching TV series on learners' comprehension of phrases (4-gram chunks). Additionally, frequent viewers also seemed to use more idiomatic language than infrequent viewers when writing fan fiction. Their use of idiomatic structures was even similar to the frequency of the structures in the input materials.

Playing computer games, the Internet, and social media

Computer use (Internet, computer games, social media) is another important type of out-of-class input for language learners (González-Fernández & Schmitt, 2015; Lindgren & Muñoz, 2013; Sundqvist & Sylvén, 2014). Playing computer games has been advocated as a means to enhance learners' vocabulary knowledge (Coxhead & Bytheway, 2015; Sylvén & Sundqvist, 2012). Coxhead and Bytheway (2015) make a strong plea for the use of massively multiplayer online role-playing games (MMORPGs). They argue that one of the benefits of MMORPGs is that they provide ample opportunities for meeting words frequently. Given that the average gamer spends 22 hours/week on digital games (Willimas, Yee, & Caplan, 2008, as cited in Coxhead & Bytheway, 2015), MMORPGs offer repeated encounters with (unfamiliar) words. Notwithstanding the advantages (input, frequency, high motivation), Coxhead and Bytheway mention that digital gameplays might not be suitable for beginner learners.

Sundqvist and her colleagues conducted a number of empirical studies that investigated the relationship between playing computer games and vocabulary knowledge (Sundqvist & Sylvén, 2014; Sundqvist & Wikström, 2015; Sylvén & Sundqvist, 2012). Their findings

suggest that frequent gamers (= more than five hours of gaming per week) knew more words and used more advanced vocabulary than non-gamers. However, they did not explore the effect of other types of exposure. In Lindgren and Munoz' (2013) study, it was revealed that playing computer games was a significant predictor of reading and listening proficiency, but it explained less variance than watching TV/movies and listening to songs. Similarly, Kuppens (2010) also found that watching TV had a bigger impact on learners' vocabulary knowledge than playing computer games.

Research has also looked at the effect of gender on learners' use of English language computer use and vocabulary knowledge. Although studies have shown that boys are more frequently engaged in playing computer games than girls (Kuppens, 2010; Sundqvist & Sylvén, 2014; Sundqvist & Wikström, 2014), the effect of gender on learners' vocabulary knowledge seems to be less clear. Kuppens (2010) did not find an effect of gender on vocabulary knowledge, but she did find that the effect of TV viewing was stronger with girls than with boys (interaction effect between gender and watching TV and movies). Sundqvist and Wikström (2014) found significant correlations between the frequency of gaming and boys' vocabulary knowledge, but not with girls. However, compared to the boys, most girls were just not frequent gamers. Additionally, it remains unclear whether gender also affected learners' vocabulary knowledge because it was not mentioned whether the boys and girls also differed in their vocabulary scores.

Aim

Although a few studies have investigated Flemish EFL learners' frequency of exposure to English language media, little is known about the relationship between different types of exposure and vocabulary knowledge. In addition, it remains unclear how length of instruction

and gender interact with current out-of-class exposure and how those three factors (and their interactions) might affect learners' vocabulary knowledge.

The purpose of this study is to explore the relationship between current out-of-class exposure to English language input and vocabulary learning. The specific research questions that were addressed are:

1. How often are Flemish EFL learners exposed to English outside of the classroom? Do 16-year old and 19-year old learners differ in the frequency to which they are exposed to different types of out-of-class exposure? Does gender affect out-of-class exposure to English language media?
2. Is there a relationship between current out-of-class exposure and learners' vocabulary knowledge?
3. Which factors (length of instruction, gender, current out-of-class exposure) affect learners' vocabulary knowledge?

To answer the research questions, a vocabulary knowledge test and a questionnaire were administered to two groups of English-as-a-foreign language learners in Flanders: learners in their third year of formal instruction and learners in their sixth year of formal instruction.

Method

Participants

Participants were recruited from the fourth year of secondary education (N = 50; age 15-16) and from the first year of university (N = 32; age 19). Participants in the fourth year of secondary education would typically be in their third year of formal English instruction at the time of data collection, and the university participants would be in their sixth year. Data from

three participants were removed because one participant was bilingual (Dutch-English) and two others did not complete the questionnaire, bringing the total number of participants to 79 (47 in the fourth year of secondary education, 32 university students); 34 female participants and 45 male participants. Given the study's focus on TV viewing, it should be noted that foreign language TV programs and movies are subtitled in Flanders. As a result, the learners in this study can be expected to be used to watching English language TV programs and movies.

Test instruments

Vocabulary test

Learners' vocabulary knowledge was measured by means of the VocabLab test (Peters, Velghe, & Van Rompaey, 2015), a frequency-based multiple choice test, which provides an estimate of learners' vocabulary knowledge at four frequency levels, viz. 0-2,000 (2K), 2,001-3,000 (3K), 3,001-4,000 (4K), and 4,001-5,000 (5K). For each frequency level (2K, 3K, 4K, 5K), 30 items were sampled from the Corpus of Contemporary American English (COCA) (Davies, 2008). The test, which consists of 120 items in total, has a written multiple choice format in which test items are presented in isolation. Each item is accompanied by four definitions (one correct answer and three distractors) and one "I don't know"-option to minimize guessing (Zhang, 2013). Finally, the vocabulary test is geared towards Dutch-speaking learners of English in that the number of loanwords and cognates was limited because they might inflate test scores (Cobb, 2000; Laufer & McLean, 2016). By limiting the number of cognates the test aims to prevent test takers from answering a test item correctly without having been exposed to the item (see also Cobb, 2000). Nevertheless, we are aware that a test ideally contains a representative number of cognates that corresponds to the number of cognates in the frequency band tested (Laufer, this issue). This is not an easy task because it

requires intensive corpus analysis (McNamara & Roever, 2006). Given that the test aims to minimize guessing and the risk of overestimation, the test probably provides a more conservative estimate of a learner's knowledge compared to other existing tests, although this still needs to be examined empirically. The test had good internal consistency (Cronbach's alpha = .95; N = 79). Additionally, the test showed an implicational scale, which means that scores on sections related to lower-frequency words were lower than scores for high-frequency words (see also Results section).

Example of test item of the English vocabulary test

talk:

0 to speak

0 to remove something

0 to give in return for money

0 to start an important activity

0 I don't know the answer

Questionnaire

To investigate the relationship between current out-of-class contact with English, learners were asked to complete a questionnaire. To that end, the European Survey of Language Competences (ESLC) was used (European Commission, 2012)[1]. However, in this study, we only report on those questions that were related to learners' exposure to English language media outside of the classroom. In addition to a number of general background questions (L1, gender, age, degree program), nine questions in Dutch focused on learners' exposure to English language songs, (subtitled) TV or movies, computer games, websites, books, and

magazines[2]. Learners had to tick off how often they come into contact with English through media. The response categories were the following: Never, a few times a year, about once every month, a few times a month, and a few times a week.

1. How often do you listen to songs in English?
2. How often do you watch movies spoken in English without subtitles?
3. How often do you watch movies spoken in English with subtitles?
4. How often do you watch television programs spoken in English without subtitles?
5. How often do you watch television programs spoken in English with subtitles?
6. How often do you play computer games spoken in English?
7. How often do you read books written in English?
8. How often do you read a magazine or a comic written in English?
9. How often do you visit websites written in English?

Data analysis

An independent group Chi-square test was computed to investigate whether 16-year old and 19-year old learners differ in their out-of-class exposure to English. Cramer's *V* was used as a measure of effect size. Secondly, to explore the relationship between learners' out-of-class exposure and their vocabulary knowledge, Spearman's rank correlations were run. Finally, an analysis of covariance (ANCOVA) with two independent variables (length of instruction, gender), one covariate (current out-of-class exposure to English), and learners' vocabulary knowledge as dependent variable was run to answer the third research question.

Results

Vocabulary test

Table 1 shows the descriptive statistics for the vocabulary test, per group and for all participants. The university students performed better on the test as a whole and on each test section. Additionally, there was hardly any difference in the total score between male and female participant (male participants: mean = 93.04, *SD* = 18.02, *CI* = 87.63-98.46; female participants: mean = 92.38; *SD* = 16.21; *CI* = 86.73-98.04).

Table 1

Mean scores, standard deviations, and confidence intervals for vocabulary test scores (per group, all participants)

	Total (Max = 120)		**2K (Max = 30)**		**3K (Max = 30)**		**4K (Max = 30)**		**5K (Max = 30)**	
	Mean (*SD*)	95% *CI*	Mean (*SD*)	95% *CI*	Mean (*SD*)	95% *CI*	Mean (*SD*)	95% CI	Mean (*SD*)	95% *CI*
SEC4	88.09 (17.5)	82.95-93.22	27.4 (2.67)	26.62-28.19	24.06 (4.62)	22.71-25.42	20.0 (4.96)	18.54-21.46	16.62 (2.00)	14.56-18.67
UNIV	99.63 (14.30)	94.47-104.78	28.59 (1.86)	27.92-29.27	26.22 (3.56)	24.93-27.50	23.5 (4.47)	21.89-25.11	21.31 (5.46)	19.35-23.28
All	92.76 (17.16)	88.92-96.60	27.89 (2.43)	27.34-28.43	24.94 (4.33)	23.97-25.91	21.42 (5.04)	20.29-22.55	18.52 (7.69)	17.00-20.04

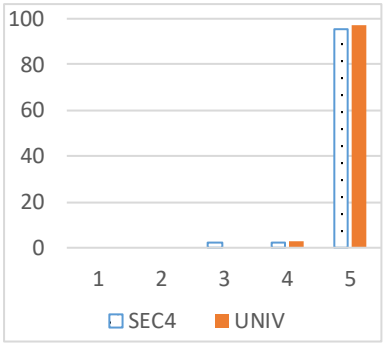
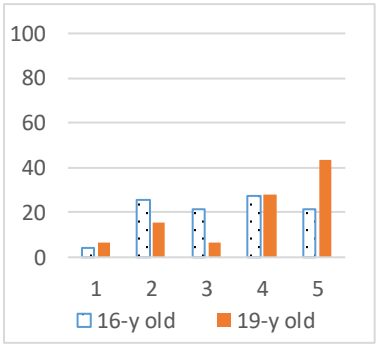
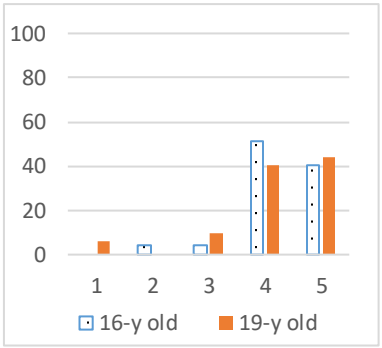
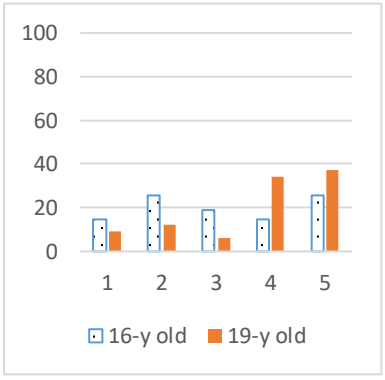
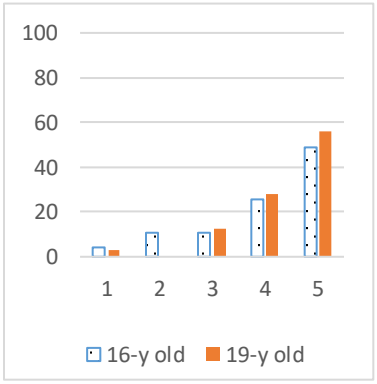
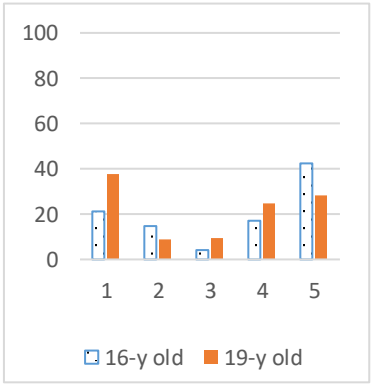
Note: *SD* = standard deviations; *CI* = confidence interval; SEC4 = learners in the fourth year of secondary education; UNIV = university students

Research question 1: How often are Flemish EFL learners exposed to English outside the classroom? Do 16-year old and 19-year old learners differ in the frequency to which they are exposed to different types of out-of-class exposure? Does gender affect out-of-class exposure to English language media?

As can be seen in Figure 1, Flemish learners are regularly exposed to English language songs, to English language movies with and without subtitles, and TV programs with and without subtitles. Learners are also exposed to English when playing computer games or browsing the Internet. However, compared to the audio-visual input to which these learners are exposed, their exposure to written input (books, magazines) is far more limited. This means that the main types of current out-of-class exposure are TV, movies, songs, computer games and the Internet. The contingency tables have been included in Appendix 1. Chi-square tests were computed to compare 16-year old learners' and 19-year old learners' current out-of-class exposure to English. We did not find any significant relationship between the two groups and the types of exposure. However, the *p*-value was close to significance in the case of playing computer games reading books (χ^2 (4, N = 79) = 9.03, p = .06) and exposure to English language TV programs without subtitles (χ^2 (4, N = 79)= 8.39; p = .078). The relationship between gaming and length of instruction on the one hand and between watching TV programs without subtitles and length of instruction was moderate with Cramer's V values of .34 and .32 respectively. This means that 16-year old learners are more frequently engaged in playing English language computer games than university students and that university students watch non-subtitled TV programs more frequently than 16-year old learners.

It was also verified whether gender affected learners' out-of-class exposure to English. One significant relationship was found between gender and the factor "playing computer

games" (χ^2 (4, N = 79) = 37.54; p < .0001). Compared to the female participants (5.7%), 61.4% of the male participants reported to play computer games in English several times a week. No other significant relationships were found.

Exposure to songs 	Exposure to movies without subtitles 	Exposure to subtitled movies 
Exposure to TV programs without subtitles 	Exposure to subtitled TV programs 	Exposure to games 
Exposure to books	Exposure to magazines	Exposure to the Internet

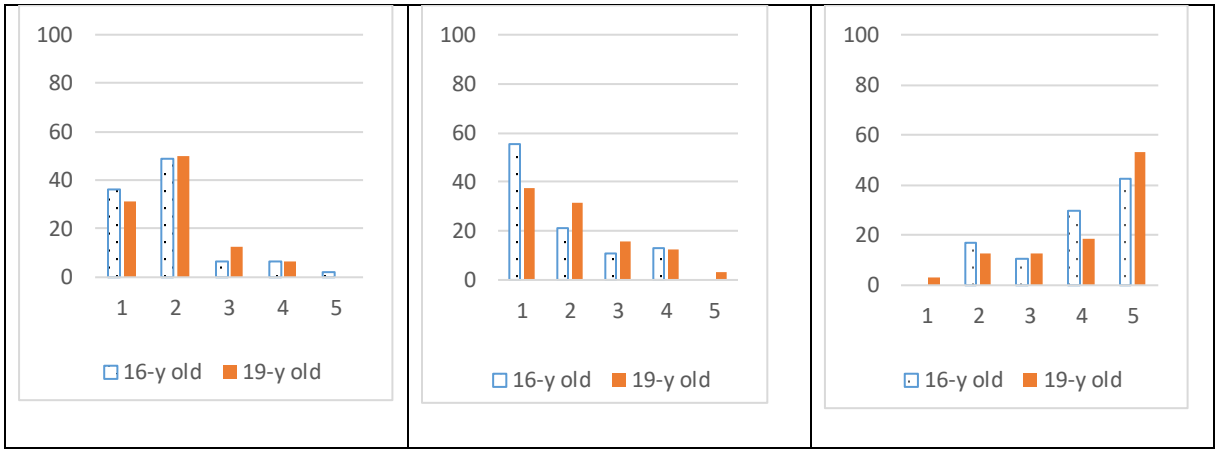


Figure 1. Frequency of exposure to different types of out-of-class exposure (1 = never, 2 = a few times/year, 3 = once/month, 4 = a few times/month, 5 = a few times/week)

Research question 2: Is there a relationship between out-of-class exposure and learners' vocabulary knowledge?

Spearman's rank correlations were computed to investigate the relationship between the different types of out-of-class exposure and learners' vocabulary knowledge (see Table 2). Given that for correlational analyses, effect sizes and confidence intervals are considered more important than *p*-values (Larson-Hall, 2010), we did not adjust the *p*-values for multiple comparisons. However, for reasons of completeness, the *p*-values have been indicated in the table. The analyses showed that there was a positive (and significant) correlation between

- exposure to English language movies without subtitles and learners' vocabulary knowledge;
- exposure to English language TV programs without subtitles and learners' vocabulary knowledge;
- reading English language books and learners' vocabulary knowledge;
- reading English language magazines and learners' vocabulary knowledge;
- visiting English language websites and learners' vocabulary knowledge.

Except for use of the Internet, which had a medium-sized correlation, all other correlations were small (0.25 is small, 0.40 is medium, and 0.60 is large, see Plonsky (2015) for benchmarks for interpreting correlations). The effect sizes of the correlations between vocabulary knowledge and those factors were medium-sized (Cohen, 1992; see also Larson-Hall, 2010). We also found one weak, negative correlation, viz. between listening to English language songs and learners' vocabulary knowledge, as can be seen in Table 11. However, this correlation had a small effect size.

Table 2

Correlations between out-of-class exposure factors and learners' vocabulary knowledge

Factor	**Vocabulary**	***N***	***CI***	**Effect size (R^2)**
Songs	-23*	79	-.43, -.01	.05
movies without subtitles	.32**	79	.11, 0.51	.10
movies with subtitles	-.18	79	-.04, .39	.03
TV programs without subtitles	.37**	79	.16, .55	.14
TV programs with subtitles	.13	79	-.09, .34	.02
Computer games	.09	79	-.13, .31	.01
Books	.30**	79	.09, .49	.09
Magazines	.31**	79	.10, .50	.10
Internet	.41**	79	.21, .58	.17
Composite exposure[a]	.35**	79	.14, .53	.12
Composite exposure (only significant correlations)[b]	.40**	79	.20, .57	.16

* correlation significant at .05-level; ** correlation significant at .01-level

a. Composite score refers to the sum of all parameters; a Pearson correlation was computed.

b. Composite scores includes the significant parameters: songs, movies without subtitles, TV programs without subtitles, books, magazines, and the Internet.

Correlations were also computed for the composite scores of current out-of-class exposure (= sum of the different types of exposure) and learners' vocabulary knowledge. A medium-sized, positive correlation with a medium-sized effect ($R^2 > .09$ and $< .25$) was found (see Table 11). Given the significant difference between male and female participants in frequency of playing computer games, separate Spearman's rank correlations were computed for the male and female participants. However, no meaningful correlations were found between playing computer games and the male participants' vocabulary knowledge ($r = .17$; $R^2 = .03$; 95% CI = -.13; .44) on the one hand and between playing computer games and the female participants' vocabulary knowledge ($r = -.04$; $R^2 = .002$; 95% CI = -.37; .30) on the other.

Research question 3: Which factors (length of instruction, gender, current out-of-class exposure) affect learners' vocabulary knowledge?

To answer the third research question, a two-factor ANCOVA was computed with length of instruction and gender as independent variables, out-of-class exposure to English (= composite score b) as covariate, and vocabulary knowledge as dependent variable[3]. As can be seen in Table 1, learners at university (19 years old) had a higher score on the vocabulary test than learners in the fourth year of secondary school (16 years old). Male participants scored slightly higher on the vocabulary test than female participants. The ANCOVA revealed that there was a significant difference between the university learners and the learners in their

fourth year of secondary school (F = 5.61; p = .02; η_p^2 = .07). Length of instruction explained 7% of the variance. Gender did not affect the vocabulary test scores. Current out-of-class exposure was positively correlated with learners' vocabulary knowledge (F = 10.63; p = .002; η_p^2 = .13). It explained 13% of the variance, which means that the effect of current out-of-class exposure on learners' vocabulary knowledge was larger than the effect of instruction, which explained 7% of the variance.

Discussion

Learners' exposure to English language input outside of the classroom

It is clear from this study that 16-year old and 19-year old Flemish learners are exposed to large amounts of English language input outside of the classroom. The findings show that they are mainly exposed to spoken English input: songs, TV programs, movies, and computer games. Second, the findings also suggest that these learners do not read English language books or magazines frequently. However, they might be engaged in reading activities when using the Internet.

The findings presented here are in line with previous research on foreign language learners' out-of-class exposure to foreign language input that have shown that learners are mainly exposed to songs, audio-visual input, computer games and the Internet (Lindgren & Muñoz, 2013; Sylvén & Sundqvist, 2014). Kuppens (2010), who also focused on Flemish learners, revealed the same pattern of input factors: songs, subtitled TV and movies, computer games and the Internet. The participants in the present study watched more non-subtitled TV programs and movies compared to the learners in Kuppens' study, but it should be pointed out that the latter were younger learners (11-12 years old) and had not received any formal instruction yet.

Although we did not find significant relationships between the two age groups and the type of exposure, the findings suggest that the type of English language media to which EFL learners are most frequently exposed might change over time. The 16-year old learners were more frequently engaged in playing computer games than the university students, whereas the latter watched non-subtitled TV programs and movies more often than the 16-year old learners. Given the frequency with which the university learners reportedly watch non-subtitled TV programs and movies, they can be said to be independent language users who are able to autonomously watch audio-visual input. This finding is also reflected in their vocabulary scores, because the vocabulary test results showed that they had mean scores which would indicate mastery of the 2K and 3K level. Achieving this level of mastery is in line with the vocabulary figures put forward by Webb and Rodgers (2009a, 2009b) for adequate comprehension of TV programs and movies.

A final observation relates to the relationship between gender and out-of-class exposure. Our findings corroborate Kuppens' and Sundqvist's research (Sundqvist & Sylvén, 2014; Sundqvist &Wikström, 2015; Sylvén & Sundqvist, 2012) that boys are more frequently engaged in playing computer games than girls. A majority of the boys reported to play English language computer games several times a week.

The relationship between out-of-class exposure and learners' vocabulary knowledge

The second research question can be answered affirmatively. The correlational analyses suggest that there were significant correlations between different types of out-of-class exposure and learners' vocabulary knowledge. Looking at the effect sizes, the largest effect was found for (1) use of the Internet, followed by (2) non-subtitled TV programs, (3) non-subtitled movies and magazines, and finally (4) books. The effect of listening to songs was negligible.

Our findings lend support to the positive effect of watching TV revealed in previous studies (Lindgren & Muñoz, 2013; González-Fernández & Schmitt, 2015; Kuppens, 2010; Schmitt & Redwood, 2011) and provide evidence for Webb's (2015) claim that extensive viewing has the potential to result in significant vocabulary gains. What is surprising is that there was no correlation between subtitled TV or movies and vocabulary knowledge. One explanation could be that there was simply not enough variance in the scores, as almost all participants watched subtitled TV programs and movies on a regular basis.

In line with González-Fernández and Schmitt (2015), a positive correlation between reading and vocabulary knowledge was found, which supports previous research that reading has the potential to lead to vocabulary learning (Pellicer-Sánchez & Schmitt, 2010; Schmitt & Redwood, 2011), even though it should be emphasized that only a few participants in this study read books regularly. However, these learners might also be engaged in reading when visiting English language websites, which almost half of the participants in this study reported to be doing several times a week. Additionally, the highest correlation (with a medium effect) with vocabulary knowledge was found for browsing English language websites. This suggests that learners might not read many books, but they might be reading other types of English language texts online. Future research is warranted to investigate this in more detail.

An unanticipated finding was that there was no correlation between playing computer games and learners' vocabulary knowledge. Unlike in previous research (Sylvén & Sundqvist, 2012; Sundqvist & Wikström, 2015), frequent gamers did not perform better on the vocabulary test. This unexpected finding might be explained by the age of the learners, as participants in previous studies were younger (11-12 years old in Kuppens (2010), Lindgren and Muñoz, 2013; Sylvén & Sundqvist, 2012) than the learners in the present study (16 years old and 19 years old). Secondly, in previous studies (Kuppens, 2010; Sundqvist & Wikström,

2015; Sylvén & Sundqvist, 2012), learners were divided into groups according to their frequency of gameplay in order to determine the effect of playing computer games. In the present study, correlational analyses were computed in order not to lose any of the underlying information, which happens as a result of grouping learners (Muñoz, 2011; see also Plonsky & Oswald, 2017). Studies that did use correlation and regression analyses, however, indicated that computer games explained less variance compared to watching TV (Lindgren & Muñoz, 2013).

Factors affecting learners' vocabulary knowledge

Our third research question focused on the effect of length of instruction, gender, and current out-of-class exposure. For the latter, the composite score of significant correlations was used as a covariate in the analyses. The findings indicate that length of instruction as well as out-of-class exposure positively affected learners' vocabulary knowledge, but the effect of out-of-class exposure was larger. Even though the male participants played more computer games in English, gender did not affect learners' vocabulary knowledge.

The findings are consistent with previous research showing the beneficial effect of exposure on language learning (González-Fernández & Schmitt, 2015; Housen et al., 2001; Lindgren & Muñoz, 2013; Muñoz, 2011). Additionally, they confirm the association between length of instruction and out-of-class exposure on the one hand and learners' vocabulary knowledge on the other, as shown in Muñoz' (2011). More years of instruction is positively correlated with vocabulary knowledge. At the same time, the findings suggest that viewing TV as well as reading (books, magazines, websites), are all sources of out-of-class exposure that might foster vocabulary learning. Turning to the effect of gender, the findings are in agreement with Kuppens (2010), who did not find a significant difference between boys' and girls' vocabulary knowledge in spite of differences in out-of-class exposure.

The pedagogical implications that emerge from this study point to the value of out-of-class exposure for vocabulary learning. The following three factors in particular seem to be positively associated with learners' vocabulary knowledge: watching non-subtitled TV and movies, using the Internet, and reading books. Recently, researchers have advocated TV viewing as an approach to enlarging learners' vocabulary knowledge (Lin & Siyanova-Chanturia, 2015; Webb, 2015). Although reading books and magazines was positively correlated with learners' vocabulary knowledge, this study also shows that learners' engagement with books is limited. Taken together, the results show that teachers should emphasize the benefits of language input and of engaging in language activities outside of the classroom. This is particularly relevant in EFL contexts where English language input is limited. Given the wide availability of the Internet, access to English language input has become much easier. The Internet provides access to digital games, TV shows, movies, and songs (Coxhead & Bytheway, 2015; Lin & Siyanova-Chanturia, 2015). Additionally, many Internet sources provide written and spoken input, such as captions for TED talks and texts for MMORPGs (Coxhead & Bytheway, 2015). Teachers should support learners in how to use the Internet for language learning and in how it can facilitate learning.

Limitations and suggestions for future research

There are a number of limitations in this study. First, the types of exposure were limited to nine types of exposure to English language media. For instance, use of social media (Gonzalez-Fernandez & Schmitt, 2015) was not explicitly addressed. Second, no distinction was made between watching TV programs or movies with L1 or L2 subtitles (= captions). Future studies could use interviews to obtain a more comprehensive picture of learners' exposure to English language input. Third, only one type of word knowledge was tested: meaning recognition. Further research should be undertaken to investigate other word

knowledge aspects, such as meaning recall (= giving the meaning) or productive word knowledge. It is also important to bear in mind that this study focused on the relationship between learners' current out-of-class exposure to English and vocabulary knowledge. The use of a questionnaire does not allow us to draw any conclusions on the longitudinal effect of out-of-class exposure on learners' vocabulary knowledge. Finally, Lindgren and Munoz (2013) found that cognate linguistic distance was the most important predictor of learners' listening and reading comprehension, followed by learners' out-of-class exposure. Given the small cognate linguistic distance between Dutch and English, further research focusing on other languages is required to develop a more complete picture of the effect of out-of-class exposure.

Conclusion

This study explored how often Flemish English-as-a-foreign language learners are exposed to English language media and to which types of media they are exposed. Secondly, this study aimed to investigate the relationship between different types of out-of-class exposure and learners' vocabulary knowledge. Finally, this study also aimed to answer the question how length of instruction, gender, and out-of-class exposure affect learners' vocabulary knowledge. The findings of this study show that Flemish learners, aged 16 and 19, are frequently exposed to English language media. The most frequent types of input are listening to songs, watching subtitled and non-subtitled TV programs and movies, playing computer games, and using the Internet. The study also showed that there was a positive, medium-sized relationship between learners' vocabulary knowledge and the following factors: watching non-subtitled TV programs and movies, reading books and magazines, and browsing the Internet. Finally, this study indicated that both length of instruction and out-of-class exposure affected learners' vocabulary positively, but the latter had a larger effect than length of

instruction. In sum, this study shows the benefits of exposure to language input outside of the classroom and the importance of input for vocabulary learning.

Endnotes

1. The data reported in the present study are part of a larger project in which learners' vocabulary in two foreign languages was compared. The data in the present study were from learners who only took part in the English leg of the project (only English vocabulary test and the questionnaire about out-of-class exposure to English) and were thus not used in the study focusing on two languages, which are reported elsewhere.

2. The complete questionnaire that was used in the *European Survey on Language Competences* can be found on the following website: https://crell.jrc.ec.europa.eu/sites/default/files/files/eslc/MS_SQ_EN.pdf

3. The ANCOVA was also run with composite score a (all factors, including the ones with non-significant correlations with learners' vocabulary knowledge). The analysis yielded the same results, except a slightly lower effect size for current out-of-class exposure ($\eta_p^2 = .10$).

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Appendix 1: contingency tables

Frequency of listening to English language songs

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	0%	0%	2.1%	2.1%	95.7%
UNIV	0%	0%	0%	3.1%	96.9%
ALL	0%	0%	1.3%	2.5%	96.2%

Frequency of watching English language movies without subtitles

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	4.3%	25.5%	21.3%	27.7%	21.3%
UNIV	6.3%	15.6%	6.3%	28.1%	43.8%
ALL	5.1%	21.5%	15.2	27.8%	30.4%

Frequency of watching English language movies with subtitles

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	0%	4.3%	4.3%	51.1%	40.4%
UNIV	6.3%	0%	9.4%	40.6%	43.8%
ALL	2.5%	2.5%	6.3%	46.8%	41.8%

Frequency of watching English language TV programs without subtitles

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	14.9%	25.5%	19.1%	14.9%	25.5%
UNIV	9.4%	12.5%	6.3%	34.4%	37.5%
ALL	12.7%	20.3%	13.9%	22.8%	30.4%

Frequency of watching English language TV programs with subtitles

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	4.3%	10.6%	10.6%	25.5%	48.9%
UNIV	3.1%	0%	12.5%	28.1%	56.3%
ALL	3.8%	6.3%	11.4%	26.6%	51.9%

Frequency of playing computer games in English

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	21.3%	14.9%	4.3%	17%	42.6%
UNIV	37.5%	0%	9.4%	25%	28.1%
ALL	27.8%	8.9%	6.3%	20.3%	36.7%

Frequency of reading English language books

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	36.2%	48.9%	6.4%	6.4%	2.1%
UNIV	31.3%	50%	12.5%	6.3%	0%
ALL	34.2%	49.4%	8.9%	6.3%	1.3%

Frequency of reading English language magazines or comics

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	55.3%	21.3%	10.6%	12.8%	0%
UNIV	37.5%	31.3%	15.6%	12.5%	3.1%
ALL	48.1%	25.3%	12.7%	12.7%	1.3%

Frequency of visiting English language websites

	Never	A few times/year	Once/month	A few times/month	A few times/week
SEC4	0%	17%	10.6%	29.8%	42.6%
UNIV	3.1%	12.5%	12.5%	18.8%	53.1%
ALL	1.3%	15.2%	11.4%	25.3%	46.8%